

Avatar Behavioral Modeling Tools

Digital Virtual Humans Help the Military Communicate in Different Cultures



Technology and Innovation

The focus of Vcom3D's DARPA SBIR project is to develop technology that simulates the gestures, facial expressions, body language, and other non-verbal behaviors of "digital virtual humans." This technology can be embedded in computer-based training simulations, including simulations based on commercial "game engines" as well as interactive Web-based multimedia. Vcom3D provides animation tools that substantially accelerate the creation of language-based learning scenarios and games. These scenarios use digital virtual humans that can lip-sync automatically to any language.

The company provides libraries of interchangeable characters with different ethnicities and behaviors appropriate to different cultures and a tool for rapidly creating interactive scenarios and games in which students learn by interacting with these characters. Once a scenario or game is created, it can be rapidly modified to teach another language or culture. This provides a much lower lifecycle cost than using live videos of actors, or by using traditional animation techniques.

The technology developed by Vcom3D under this SBIR offers a significant advantage over commonly used technology for creating multimedia instruction for language learning, which relies on making video recordings of live actors who have native proficiency in the target language and know the associated culture. For more specialized languages, such as Persian and Arabic dialects,



qualified talent is expensive and hard to locate and typical hourly production costs range from \$35,000–\$50,000. Animations are less expensive to produce, and offer greater flexibility and adaptability than video-based systems. Primary customers and end users, who will use the software to teach language and culture to military personnel, include the U.S. Army, the Defense Language Institute, U.S. Special Operations Command (SOCOM), and the U.S. Marine Corps. Commercial publishers such as Topics Entertainment are using the software to develop and sell commercial products for second-language learning.

Vcommunicator technology provides training simulations with culturally and regionally appropriate digital characters

Joint Collaborations

Vcom3D is working with a number of universities and corporations to integrate the technology with advanced natural language understanding and

high-level human behavior simulation. The proven results of the company's DARPA SBIR Phase I and II were instrumental in establishing these relationships.

Lessons Learned

- In transitioning innovations to the military, understand the need of end users and develop collaborative relationships with partners that also sell to them.
- Use the SBIR and company funds to develop the technology initially, then partner with companies to bid Broad Agency Announcements (BAAs) and similar opportunities that develop prototype applications.
- To further expand business, communicate capabilities to potential users and partners and determine how these capabilities match future contract requirements.

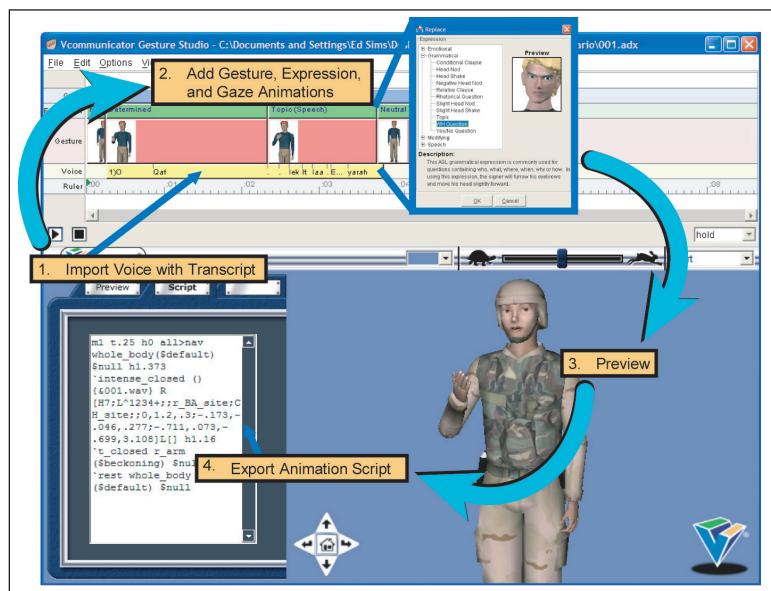
Economic Impact

Work done under the DARPA SBIR helped Vcom3D win a contract with the Pentagon's Technical System Working Group (TSWG) and Combating Terrorism Technical Support Group (CTTSO). Approximately 15 percent of the company's technology development has been funded by DARPA, and 50 percent from SBIR programs in general. Intellectual property resulting from the SBIR is being considered for protection under a new patent application.

In December 2006, Vcom3D introduced VCOM Mobile, a language and culture job-aid on an iPod or PDA. VCOM Mobile was created by warfighters for deployed warfighters. This job-aid is used for reference, practice, or one-way translation and provides spoken, written, and animated representations of sentences used in common missions.

About the Company

Vcom3D, Inc. is an Orlando, Florida-based small business co-founded by CEO Carol



Vcommunicator Studio tools allow the user to create complex multiple character scenarios in any language with behaviors appropriate for any culture or region

Wideman and CTO Ed Sims. The basic idea for the technology pursued under the DARPA SBIR program has its origins in two earlier Vcom3D applications of “digital virtual human” simulation:

- Animated characters that help deaf children learn to read, by translating English text into American Sign Language.
- Animated characters that serve as mentors and role-playing actors for teaching foreign language and culture. ■

Company Information

Vcom3D, Inc.	Carol Wideman, President
3452 Lake Lynda Dr. Ste. 260	Founded: 1996
Orlando, FL	Number of employees: 15
Phone: 407-737-7310	
Fax: 407-737-6821	
www.vcom3d.com	